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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,446	09/30/2003	Kent A. Burr	06005/38033	5635

4743 7590 05/11/2007

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ROMAN, LUIS ENRIQUE	
ART UNIT	**PAPER NUMBER**
2836	

MAIL DATE	DELIVERY MODE
05/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/675,446	BURR ET AL.	
	Examiner	Art Unit	
	Luis Roman	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 February 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/19/07 has been entered.

Applicant amendment filed on 02/19/07 has been entered. Accordingly claims 2-5, 7, 9-11, 13-14, 18, 22-26, 28 & 31-37 have been kept original, claims 1, 6, 8, 12, 15-17, 19-21, 27 & 29-30 have been amended No claims have been cancelled or added new. It also included remarks/arguments.

The examiner notes an unintentional error by listing claims 33-34 as allowable subject matter. The claims were rejected in the previous action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-37 are rejected under 35 U.S.C. §103(a) as being unpatentable over Eryurek et al. (US 6594603) in view of Christensen et al. (US 6912671).

Regarding claim 1 Eryurek et al. discloses a communication bus suitable for use in a hazardous area of a process plant (Col. 6 lines 13-16 & Fig. 4 element 28), the communication bus comprising: transmission from one device to another with a first transmission path that communicates electrical signals in a first direction (Fig. 1 pair 8 & Fig. 4 signal coming into <← I> of element 70); a second transmission path that communicates electrical signals in a second direction (Fig. 4 signals coming out <I →> of element 70).

Eryurek et al. does not specifically disclose a safety device coupled to each of the first and second transmission paths, wherein the safety device includes a control unit adapted to detect a fault condition associated with the communication bus and wherein the safety device further includes a switch unit adapted to interrupt the flow of electrical signals along each of the first and second transmission paths in response to the detected fault condition.

Christensen et al. discloses a wiring fault detection (Fig. 1) with a safety device coupled to each of the first and second transmission paths (20<data bus> 18<controller> & 28<linking device>), wherein the safety device includes a control unit (18) adapted to detect a fault condition associated with the communication bus (Col. 3 lines 60-64) and wherein the safety device further includes a switch unit (Figs. 2 & 3 elements 128<wiring fault detection>, 150<signal switching unit> & Col. 10 lines 8-13) adapted to interrupt the flow of electrical signals along each of the first and second transmission paths in response to the detected fault condition (Claim 19).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Eryurek et al. device with the Christensen et al. system because allows a complete method for detection, diagnosis and reporting faults. The examiner notes that both devices are in the same problem solving area of Fieldbus communication for industrial processes.

Regarding claim 2 Eryurek et al. in view of Christensen et al. discloses the communication bus of claim 1.

Eryurek et al. further discloses wherein the detected fault condition associated with the communication bus includes at least one of an open circuit, an electrical discontinuity, a cut in the communication bus, a severed communication bus, and a disconnected end of the communication bus (Col. 9 line 12-25).

Regarding claim 3 Eryurek et al. in view of Christensen et al. discloses the communication bus of claim 1.

Eryurek et al. further discloses including a third transmission path (Fig. 1 coming out of element 6 and counting from top down the second wire) and a fourth transmission path (Fig. 1 coming out of element 6 and counting from top down the fourth wire), wherein the safety device is coupled to each of the third and fourth transmission paths (Fig. 1 elements 6 and wires counting from top down the second and fourth one).

Regarding claim 4 Eryurek et al. in view of Christensen et al. discloses the communication bus of claim 3.

Eryurek et al. further discloses wherein each of the first, second, third, and fourth transmission paths includes twisted pair cable or coaxial cable (Col. 2 lines 42-45).

Regarding claim 5 Eryurek et al. in view of Christensen et al. discloses the communication bus of claim 3.

Eryurek et al. further discloses wherein the control unit includes a first control device (Fig. 1 element 4<left>) coupled to the third transmission path (Fig. 1 wire counting from top down, second one) and a second control device (Fig. 1 element 4<right>) coupled to the fourth transmission path (Fig. 1 wire counting from top down, fourth one), wherein the first control device includes a first signal

source adapted to generate an electrical signal that is communicated in the first direction along the third transmission path (Fig. 4 signal coming from element 6 thru wire counting from top down, second one) and wherein the second control device includes a second signal source adapted to generate an electrical signal that is communicated in the second direction along the fourth transmission path (Fig. 4 signal coming from element 6 thru wire counting from top down, fourth one).

Regarding claim 6 Eryurek et al. in view of Christensen et al. discloses the communication bus of claim 5.

Eryurek et al. further discloses wherein the first control device includes a first sensor (Col. 3 lines 7-13 & Fig 1 element 4 & Fig. 4 element 12) that measures an electrical characteristic associated with the third transmission path, and wherein the second control device includes a second sensor (Col. 3 lines 7-13 & Fig. 1 element 4 & Fig. 4 element 12) that measures an electrical characteristic associated with the fourth transmission path.

Regarding claim 7 Eryurek et al. in view of Christensen et al. discloses the communication bus of claim 6.

Eryurek et al. further discloses wherein the measured electrical characteristic associated with each of the third and fourth transmission paths include current (col. 3 lines 37-39), voltage, or resistance.

Regarding claim 8 Eryurek et al. in view of Christensen et al. discloses the communication bus of claim 6.

Eryurek et al. further discloses wherein the first control device includes a first comparator (Col. 5 lines 26-31 & Fig. 4 element 60) that compares the measured electrical characteristic associated with the third transmission path to a normal operational value, and wherein the second control device (Col. 5 lines 26-

31 & Fig. 4 element 60) that compares the measured electrical characteristic associated with the fourth transmission path to the normal operational value.

The examiner notes that it has been held that mere duplication of the essential working parts of the device involves only routine skill in the art. St. Regis Paper Co. v. Bemis co., 193 USPQ 8.

Regarding claim 9 Eryurek et al. in view of Christensen et al. discloses the communication bus of claim 8.

Eryurek et al. further discloses wherein the switch unit includes a first switch coupled to the first control device and a second switch coupled to the second control device (Col. 8 line 65 to Col. 9 line 6).

Regarding claim 10 Eryurek et al. in view of Christensen et al. discloses the communication bus of claim 9.

Eryurek et al. further discloses wherein at least one of the first switch, the second switch, the first control device, and the second control device is housed in a protective enclosure (Fig 1 shows the control devices 4 in housings).

Regarding claim 11 Eryurek et al. in view of Christensen et al. discloses the communication bus of claim 9.

Christensen et al. teaches wherein the first switch (Fig. 3 element 150) includes a first relay and a second relay (Col. 10 lines 8-14), and the second switch (Fig. 3 element 150) includes a third relay and a fourth relay (Col. 10 lines 8-14), wherein each of the first and second relays is coupled to the first control device (Fig. 3 relays from element 150 connected to smart field devices <Fig. 1 elements 22, 24, 26> thru line 30), and wherein each of the third and fourth relays is coupled to the second control device (note that Eryurek et al. has the control devices <Fig. 1 elements 4>).

The duplication of parts was addressed above.

Regarding claim 12 Eryurek et al. in view of Christensen et al. discloses the communication bus of claim 11.

Christensen et al. teaches the usage of relays (Col. 10 lines 8-13), relays are electro mechanic switches which have coils that energize and de-energize to switch from one open to close state and vice versa.

Regarding claim 13 Eryurek et al. in view of Christensen et al. discloses the communication bus of claim 12.

Christensen et al. teaches the usage of relays (Col. 10 lines 8-13), the links between the first, second, third and fourth relays and the first, second, third and fourth paths is only matter of an arrangement.

The examiner notes that it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

Regarding claim 14 Eryurek et al. in view of Christensen et al. discloses the communication bus of claim 13.

Christensen et al. teaches the usage of relays (Col. 10 lines 8-13), relays are electro mechanic switches, which have contacts that are normally closed during normal operation.

Regarding claim 15 Eryurek et al. in view of Christensen et al. discloses the communication bus of claim 14.

Christensen et al. teaches a data bus (Fig. 20), controlled by a controller (Fig. 1 element 18) and the usage of relays (Col. 10 lines 8-13). The duplication and arrangement of parts was addressed above.

Regarding claim 16 Eryurek et al. discloses a safety device adapted for use in a hazardous area of a process plant (Col. 6 lines 13-16 & Fig. 4 element 28), the safety device comprising: a communication bus including a first transmission line (Fig. 1 pair 8 & Fig. 4 signal coming into <← I> of element 70)

and a second transmission line (Fig. 4 signals coming out <I →> of element 70), wherein both the first and second transmission lines are coupled between one process device and a second process device disposed at different locations within the process plant to communicate electrical signals between the first process device and the second process device (Fig. 1 elements 4 & 6).

Christensen et al. discloses a wiring fault detection (Fig. 1) with a control unit coupled to the second transmission line to detect a fault condition associated with the communication bus (20<data bus> 18<controller> & 28<linking device>); and a switch unit (Figs. 2 & 3 elements 128<wiring fault detection>, 150<signal switching unit> & Col. 10 lines 8-13) coupled to the first transmission line and to the control unit, wherein the switch unit operates to interrupt the flow of electrical signals along the first transmission line responsive to the fault condition associated with the communication bus (Claim 19).

Regarding claim 17 Eryurek et al. in view of Christensen et al. discloses the safety device of claim 16.

Christensen et al. further discloses wherein the control unit includes a sensor (Col. 4 lines 53-64) adapted to measure an electrical characteristic associated with the second transmission line (Fig. 2 elements 128, 30).

Regarding claim 18 Eryurek et al. in view of Christensen et al. discloses the safety device of claim 17.

Christensen et al. further discloses wherein the measured electrical characteristic associated with the second transmission line includes current, voltage, or resistance (Col. 4 lines 53-64 & Fig. 3 elements 152, 158, 160, 168).

Regarding claim 19 Eryurek et al. in view of Christensen et al. discloses the safety device of claim 17.

Christensen et al. further discloses wherein the control unit includes a comparator (Col. 13 lines 6-19 & Fig. 4A element 210) to compare the measured

electrical characteristic associated with the second transmission line to a normal operational value.

Regarding claim 20 Eryurek et al. in view of Christensen et al. discloses the safety device of claim 19.

Eryurek et al. further discloses wherein the first transmission line includes a first transmission signal path to communicate electrical signals in a first direction, and a second transmission signal path to communicate electrical signals in a second direction (Col. 6 lines 30-38).

Regarding claim 21 Eryurek et al. in view of Christensen et al. discloses the safety device of claim 20.

Eryurek et al. further discloses wherein the second transmission line (Fig. 1 third & fourth wires, counting from top down) includes a third transmission signal path (Fig. 1 third wire, counting from top down) to communicate electrical signals in the first direction, and a fourth transmission signal path (Fig. 1 fourth wire, counting from top down) to communicate electrical signals in the second direction.

Regarding claim 22 Eryurek et al. in view of Christensen et al. discloses the safety device of claim 21.

Christensen et al. further discloses wherein each of the first, second, third, and fourth transmission signal paths includes one wire or two wires (Col. 5 lines 36-43).

Regarding claim 23 Eryurek et al. in view of Christensen et al. discloses the safety device of claim 21.

Eryurek et al. further discloses wherein the control unit includes a first control device (Fig. 1 element 4<left>) coupled to the third transmission signal path (Fig. 1 second wire, counting from top down) and a second control device

(Fig. 1 element 4<right>) coupled to the fourth transmission signal path (Fig. 1 fourth wire, counting from top down).

Regarding claim 24 Eryurek et al. in view of Christensen et al. discloses the communication bus of claim 23.

Christensen et al. teaches the usage of switches (Col. 10 lines 8-13), the links between the first, second, third and fourth switches and the first, second, third and fourth paths is only matter of an arrangement.

The examiner notes that it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

Regarding claim 25 Eryurek et al. in view of Christensen et al. discloses the communication bus of claim 24.

Christensen et al. teaches a data bus controlled by a controller (Fig. 1 element 18) and the usage of switches (Col. 10 lines 8-13). The duplication and arrangement of parts was addressed above.

Regarding claim 26 Eryurek et al. in view of Christensen et al. discloses the communication bus of claim 25.

Christensen et al. teaches the usage of switches (Col. 10 lines 8-13), relays are electro mechanic switches, which have contacts that are normally closed during normal operation.

Regarding claim 27 Eryurek et al. in view of Christensen et al. discloses the communication bus of claim 26.

Christensen et al. teaches a data bus (Fig. 20), controlled by a controller (Fig. 1 element 18), detecting units (Fig. 2 element 128) and the usage of switches that open in response to faults (Col. 10 lines 8-13). The duplication and arrangement of parts was addressed above.

Regarding claim 28 Eryurek et al. in view of Christensen et al. discloses the safety device of claim 16.

Eryurek et al. further discloses wherein each of the first and second transmission lines includes a twisted pair cable or a coaxial cable (Col. 2 lines 42-45).

Regarding claim 29 Eryurek et al. in view of Christensen et al. discloses the safety device of claim 16.

Christensen et al. further discloses wherein the first transmission line is adapted to communicate electrical signals using a communication protocol based on Ethemet, Fieldbus (Col.4 lines 53-64), HART, PROFIBUS, WORLDFIP, Device-Net, As-Interface, or CAN.

Regarding claim 30 Eryurek et al. in view of Christensen et al. discloses the safety device of claim 16.

Eryurek et al. further discloses wherein the control unit (Fig. 1 element 4) includes a signal source adapted to generate an electrical signal (Fig. 1 elements 64, 70) that is communicated along the second transmission line (Fig. 1 element <I →>).

Regarding claim 31 Eryurek et al. discloses a method (a person of the ordinary skill will understand a method that is intrinsically described by the functioning of the apparatus) for providing a communication bus suitable for use in a hazardous area of a process plant (Col. 6 lines 13-16 & Fig. 4 element 28), the method comprising: communicating electrical signals along a first transmission path (Fig. 1 pair 8 & Fig. 4 signal coming into <← I> of element 70); communicating electrical signals along a second transmission path (Fig. 4 signals coming out <I →> of element 70).

Christensen et al. discloses a wiring fault detection (Fig. 1) that measures an electrical characteristic associated with the second transmission path; detects

a fault condition associated with the communication bus in response to the measured electrical characteristic associated with the second transmission path (20<data bus> 18<controller> & 28<linking device>); and interrupts the flow of electrical signals along the first transmission path in response to the detected fault condition associated with the communication bus (Claim 19).

Regarding claim 32 Eryurek et al. in view of Christensen et al. discloses the method of claim 31.

Christensen et al. further discloses wherein detecting the fault condition associated with the communication bus includes detecting at least one of an open circuit, an electrical discontinuity, a cut in the communication bus, a severed communication bus, and a disconnected end of the communication bus (Col. 7 lines 26-44).

Regarding claim 33 Eryurek et al. in view of Christensen et al. discloses the safety device of claim 31.

Eryurek et al. further discloses wherein communicating electrical signals along the first transmission path includes communicating electrical signals in a first direction along a first pair of transmission wires and communicating electrical signals in a second direction along a second pair of transmission wires (Fig. 1).

Christensen et al. does not specifically disclose wherein communicating electrical signals along the second transmission path includes communicating electrical signals in the first direction along a third pair of transmission wires and communicating electrical signals in the second direction along a fourth pair of transmission wires.

In other words four control devices with their respective pair of wires with signals in both directions (Col. 5 lines 36-48)

Regarding claim 34 Eryurek et al. in view of Christensen et al. discloses the safety device of claim 31.

Christensen et al. further discloses wherein communicating electrical signals along the first transmission path includes communicating electrical signals in a first direction along a first transmission wire and communicating electrical signals in a second direction along a second transmission wire, and wherein communicating electrical signals along the second transmission path includes communicating electrical signals in the first direction along a third transmission wire and communicating electrical signals in the second direction along a fourth transmission wire (Col. 5 lines 36-48).

Regarding claim 35 Eryurek et al. in view of Christensen et al. discloses the method of claim 31.

Christensen et al. further discloses wherein measuring the electrical characteristic associated with the second transmission path includes measuring current, voltage, or resistance (Col. 4 lines 53-64 & Fig. 3 element 52).

Regarding claim 36 Eryurek et al. in view of Christensen et al. discloses the method of claim 31.

Christensen et al. further discloses including comparing the measured electrical characteristic associated with the second transmission path to a normal operational value (Col. 13 lines 6-19 & Fig. 4A element 210).

Regarding claim 37 Eryurek et al. in view of Christensen et al. discloses the method of claim 36.

Christensen et al. further discloses wherein interrupting the flow of electrical signals along the first transmission path includes opening switch contacts coupled to the first transmission path in response to a change in the measured electrical characteristic associated with the second transmission path from the normal operational value (Claim 19).

Applicant's arguments filed 02/19/07 have been fully considered but they are not persuasive.

The examiner addressed the usage of switches and in particular relays taught by Christensen et al. (Col.10 lines 8-13).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luis E. Román whose telephone number is (571) 272-5527. The examiner can normally be reached on Mon – Fri from 7:15 AM to 3:45 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on (571) 272-2084. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from Patent Application Information Retrieval (PAIR) system.

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Luis E. Román
Patent Examiner
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LR05/02/07

5/7/07

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